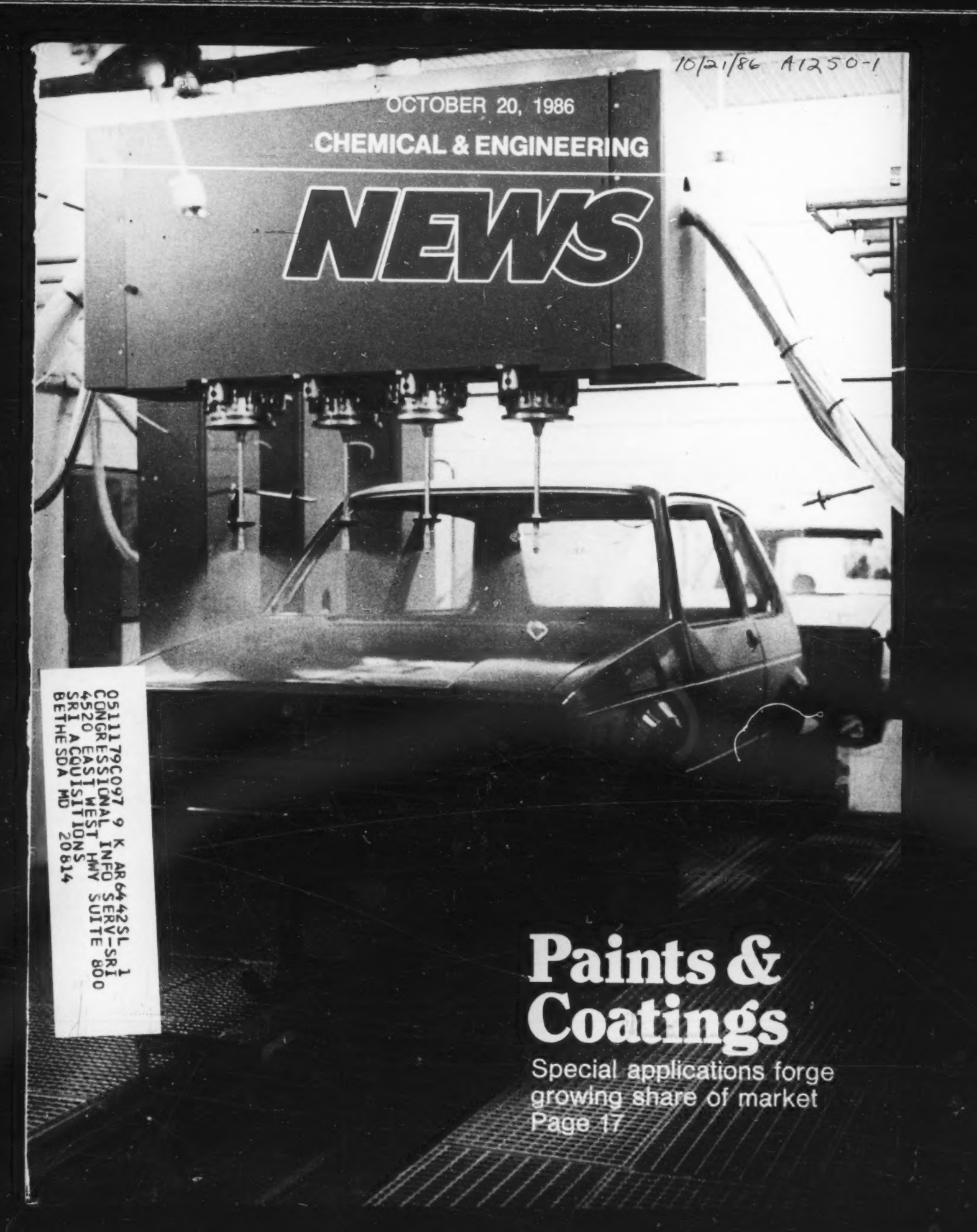
10/21/86 A1250-1

OCTOBER 20, 1986

CHEMICAL & ENGINEERING

NEWS



05111179C097 9 K AR6442SL 1
CONGRESSIONAL INFO SERV-SRI
4520 EAST WEST HWY SUITE 800
SRI ACQUISITIONS
BETHESDA MD 20814

Paints & Coatings

Special applications forge growing share of market

Page 17

CHEMICAL & ENGINEERING NEWS

Volume 64, Number 42
CENEAR 64 (42) 1–80
ISSN 0009-2347

OCTOBER 20, 1986

News of the Week

■ **Nobel Prize winners in chemistry, physics, and physiology or medicine are announced.** **Page 4**

■ **Initiative on California ballots is designed to limit salaries of state employees, which would have a harmful effect on University of California's system of higher education.** **Page 5**

■ **U.S. chemical advisers must take a tough stand in multinational trade negotiations to halt erosion of chemical trade surplus.** **Page 6**

■ **USX, in the midst of a takeover battle with corporate raider Carl Icahn, plans to spin off its chemical operations into a separate company, Aristech Chemical Corp.** **Page 6**

Government

Competitive challenge from Japan is being dealt with in an indifferent and inconsistent manner by White House, according to critics. **Page 11**

Technology

Outlook for chemical engineering is bleak as the level of research opportunities is reduced by changes in industry. **Page 14**

Temperature-adaptable fabrics that have enhanced thermal storage and release properties are being developed by USDA. **Page 15**

Science

Chiral hydroboration technique is extended to synthesis of primary amines of essentially 100% optical purity. **Page 16**

ACS Focus

Petroleum Research Fund provides grants-in-aid for advanced scientific education and fundamental research in "the petroleum field." **Page 60**

Awards

ACS awardees: Oppolzer, Osteryoung, Pauling, Pruitt, Rice, Rossiter, Sachtler, and Schleyer. **Page 61**

Cover: Photo courtesy of BASF

Product Report

Special applications are capturing a growing share of the paint market, which is expected to reach a record $10 billion this year. **Page 17**

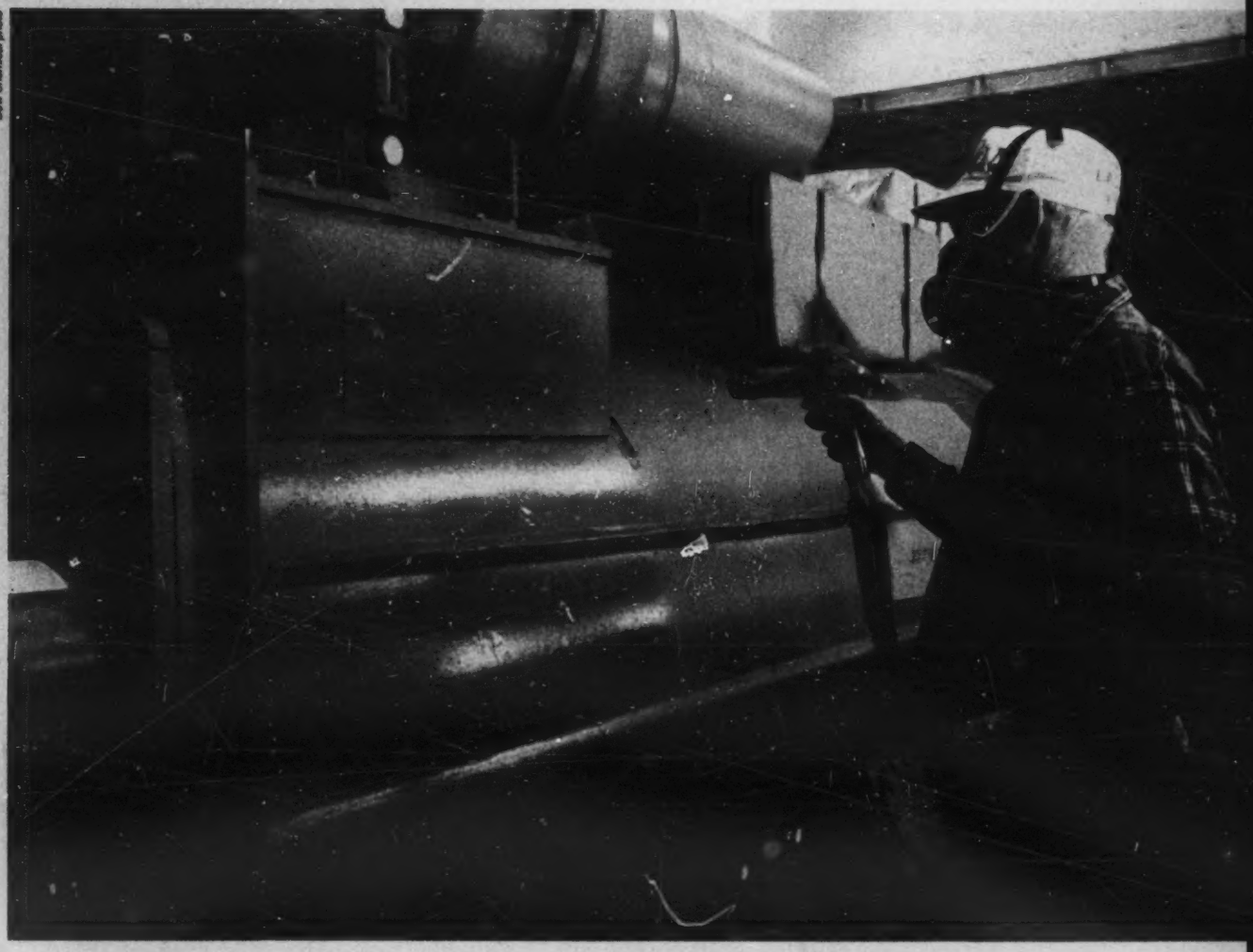
Letters 2

Concentrates

Business 7
Government 10
Science/Technology 13

The Departments

Meetings 65
Newscripts 80



Dow Chemical photo

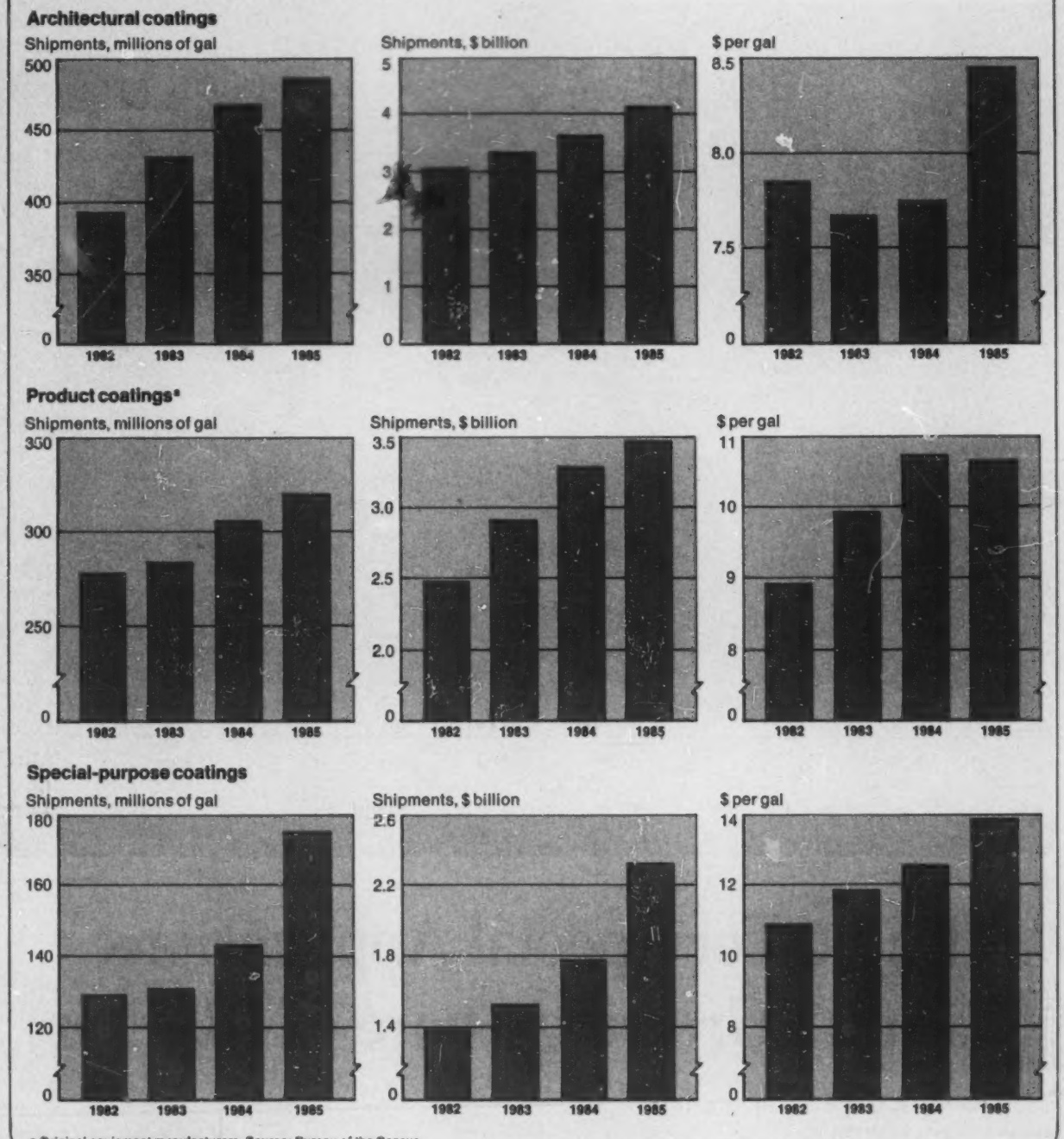
Paints for Special Applications Capture Growing Share of Market

William J. Storck, C&EN New York

The paint industry in the past few years has been in a state of flux. Consolidation, specialization, internationalization, and service are words frequently heard around the industry today—an industry that also has been described as mature and lackluster.

Companies such as the U.K.'s Imperial Chemical Industries and West Germany's BASF are beefing up their U.S. operations by purchasing big paint companies here. Other large firms are buying up smaller ones, reducing the large number of U.S. paint producers. Companies such as Du Pont are selling off unwanted parts of their paint businesses and buying other businesses to supplement paint operations that they still consider attractive. The latest of these is DeSoto, which last month disclosed that it will sell its automobile coatings business, among others. Richard R. Missar, chairman, president, and chief executive officer of DeSoto, says, "The decision to restructure will allow DeSoto to concentrate its resources on those key consumer paint, industrial coatings, specialty chemical, and deter-

Shipments continue to rise for all paint categories



a Original equipment manufacturers. Source: Bureau of the Census

gent businesses that generate a more attractive return on investment."

As paint operations become more sophisticated, both paint makers and firms that produce raw materials for paint are finding that they must support their sales efforts with technical services. This is all against a backdrop of a highly cyclical industry, tied largely to big-ticket items such as houses and automobiles.

The paint industry is made up of three main categories: architectural coatings, product coatings sold to original equipment manufacturers (OEM), and special-purpose coatings. Architectural coatings, which include both interior and exterior house paint, make up almost half the paint volume sold in the U.S. Product coatings for OEM include automotive and appliance coatings as their big-volume contributors and account for about 33% of U.S. paint

Prospects brighten for titanium dioxide producers

Producers of titanium dioxide, the largest-volume paint pigment, are having a great year. Pressed by increased demand from the paint and other industries, supplies of the pigment are relatively tight and prices are firm. Suppliers worldwide are pushing to meet demand.

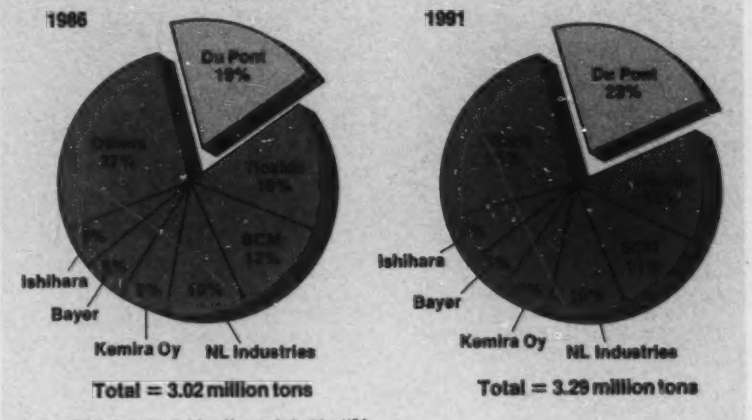
Prospects for titanium dioxide have not always been this rosy. According to Donald V. Borst, president of Hanson Industries USA's SCM pigments division, overcapacity, depressed prices, and environmental pressures during the late 1970s and early 1980s resulted in plant closures, a halt to new plant construction, and significant industry consolidation.

Borst told the meeting of the World Chemical Congress of Marketing & Business Research held in Newport Beach, Calif., last month that today supply and demand are just about in balance and this, coupled with significant increases in titaniferous raw material costs, has resulted in increased prices for titanium dioxide in the marketplace.

But, he says, the supply situation could be much worse if producers had not had faith in the industry. SCM, for example, has acquired four titanium dioxide plants since 1983. Other titanium dioxide producers such as Du Pont and Kerr-McGee have been increasing the productivity of their plants.

Borst says that historically the titanium dioxide industry has operated at an aggregate effective capacity well below its rated capacity. Reasons include shutdowns for maintenance and production-grade changes, operating limitations for environmental protection, and overstatement of nameplate capacity.

Dupont will increase TiO_2 capacity lead in next five years



Source: SCM pigments division, Hanson Industries USA

The rate of price increases for titanium dioxide will moderate, according to Borst. With the current high profit levels being enjoyed by titanium dioxide producers, he says, further price increases are likely to be a reflection of general inflation and the increasing cost of raw materials and environmental protection.

According to Borst, as demand has increased and supplies have tightened, profit margins have improved, justifying incremental expansions of existing plants. They also have led to technological changes and more recently to the announcement of new plants, apparently on the assumption that future prices will reach reinvestment levels, he says.

At least nine new plants to be completed over the next four to five years have been announced, with a total capacity of more than 400,000 tons. This is equal to 15% of 1985 total world consumption in an industry that is growing at only 2 to 2.5% per year. And the new plants will bring worldwide rated capacity to almost 3.3 million tons per year from the current level of 3.0 million tons.

It is interesting, Borst says, that all of the new plants will be based on the chloride process, whereas 63% of current world capacity is based on the sulfate process. A study of the titanium dioxide industry by Charles Kline & Co., the Fairfield, N.J., consulting firm, does not find this process change surprising. Kline says that stricter worldwide environmental regulations are causing manufacturing changes, including switching to the chloride process. Not only will the new plants use the chloride process, but some existing sulfate plants will be switched over. By 1990, 44% of total world production will be by the chloride process, compared with 37% in 1985.

volume. Special-purpose coatings, at almost 18% of U.S. paint volume, include automotive refinishing and a number of large-volume maintenance items. All of these categories contain some smaller-volume uses, but the big-ticket, highly cyclical items dominate.

The past few post-recession years have been fairly good to the paint industry. Total shipments of paints and coatings grew 6.9% in 1984, compared to 1983, to 917 million gal, according to the Commerce Department. The value of shipments increased 11.6% to $8.69 billion. In 1985, shipments increase 7.1% to 982 million gal and the value of those shipments climbed 14.3% to $9.92 billion.

In 1986 growth is likely to continue, but at a slower rate than in the past two years as the economy slows down. Through the first half of this year, Commerce Department figures show paint and coatings shipments up 3.8% from the corresponding period in 1985 to 522 million gal, while the value of those shipments has increased 6.3% to $5.32 billion—a pace that should easily give the paint industry a record $10 billion year.

Shipments of architectural coatings have lagged in the first half of 1986. After achieving a 3.8% increase

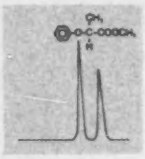
Now! The chiral selectivity and versatility you've been looking for.

Introducing
BAKERBOND™ Chiralcel™ and Chiralpak™

For optimum performance in chiral separations of

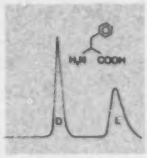
- Polar and non-polar enantiomers
- Free and derivatized amino acids

CHIRALCEL AND CHIRALPAK O TYPE
Comprised of optically active polymethacrylate (Chiralpak) or cellulose derivatives (Chiralcel). These highly resolving chiral phases offer unique separations of enantiomers with either non-polar or polar mobile phases.



Separation of (±) phenoxypropionate
Column: BAKERBOND CHIRALCEL OK 4.6-mm I.D. x 25-cm SS
Mobile Phase: 90% Hexane/ 10% Isopropanol
Flow Rate: 0.5-ml/min.

CHIRALPAK WH AND WM
Comprised of ligand exchangers. Provides resolution of many unmodified racemic α-amino acids.



Separation of DL-phenylalanine
Column: BAKERBOND CHIRALPAK WH 4.6-mm I.D. x 25-cm SS
Column Temperature: 50°C
Mobile Phase: 0.25-mM $CuSO_4$ (aqueous)
Flow Rate: 1.0-ml/min.

Choose among eight different new BAKERBOND chiral stationary phases for

Selectivity—Separate a wide range of enantiomeric drugs, pesticides, food additives, often without derivatization.

Versatility—A choice of polar or non-polar mobile phases for enhanced resolution.

Performance—Obtain high alpha values for enantiomeric purity. In fact, for many separations, alpha is greater than 1.2, and for some, greater than 2.0.

Exclusively from J.T. Baker.

For additional technical information and assistance, call toll free:
1-800-JTBAKER or write

J.T.Baker®
J.T. Baker Chemical Company
ATTN: Chiral Manager
222 Red School Lane
Phillipsburg, NJ 08865

BAKERBOND is a trademark of J.T. Baker Chemical Co. Chiralcel and Chiralpak are trademarks of Daicel Chemical Industries, Inc.

CIRCLE 67 ON READER SERVICE CARD

Three main paint categories break down this way

Architectural coatings	Marine
Exterior house paints	Film, paper & foil
Interior house paints	Pipe
Undercoaters, primers & sealers	Toys & sporting goods
Varnishes	Miscellaneous consumer & industrial products
Stains	
Product coatings[a]	**Special-purpose coatings**
Wood furniture & fixtures	Automotive & machinery refinishing
Automotive	High-performance maintenance
Metal containers	Traffic paint
Machinery & equipment	Roof coatings
Factory finished wood	Bridge maintenance
Metal furniture & fixtures	Aerosols
Sheet, strip & coil	Swimming pool coatings
Nonautomotive transportation	Arts & crafts
Appliances	Metallic coatings
Electrical insulation	Multicolored coatings

a Original equipment manufacturers. Source: SRI International

in 1985 to 486 million gal, their growth rate in the first six months of this year has slipped to a level at which shipments are essentially level. In the January-through-June period, shipments of architectural coatings increased just 0.2%to 257 million gal.

Prices of architectural coatings, however, have risen. Though physical volume remained essentially the same in the first six months, the value of shipments increased 8.9% to $2.28 billion. This follows a rise in full-year 1985 of 12.2% to almost $4.11 billion.

The price increases for architectural coatings are apparent in the unit value (the government's estimate of the value of each gallon shipped). After dropping in 1982 and 1983, unit prices have increased. Following a modest 1% rise in the value per gallon in 1984 to $7.75 per gal, they rose 9% last year to $8.45 per gal. In the first half of 1986, the unit price for architectural coatings has climbed another 5% to an average value of $8.88 per gal.

The improved performance of the architectural coatings segment of the business may be somewhat surprising to long-term observers of the paint industry. This segment has been typically a lackluster part of the industry, showing little growth in volume and, because of the great number of producers, intense price competition. Also, producers say, the dominance of Sears in the retail end of the paint business also has served to keep prices in check. "Sears sets the market" is often heard in the paint industry.

Product coatings for the OEM sector accounted for about 33% of all paint shipments or 320 million gal in 1985. This represents a 5% increase in shipments over 1984. This sector has been growing relatively steadily since 1982. In the first six months of 1986, shipments of product coatings totaled 175 million gal, almost a 9% increase over the same period in 1985.

The value of these shipments also is rising, almost 7% in 1985 to $3.49 billion from the year before. Between 1982 and 1985, the value of product coatings climbed more than 40%. For the first half of this year, however, the shipments-value picture is not so rosy. In the first six months, the value of shipments totaled $1.84 billion, an increase of just 3% over the comparable period in 1985.

This, of course, reflects falling unit value in product coatings. The unit value for this segment of the industry, which goes largely into durable goods manufacture, has been slipping since 1984. Between 1984 and 1985, the value per gallon fell almost 0.5% to $10.67 per gal. This was followed by another drop of

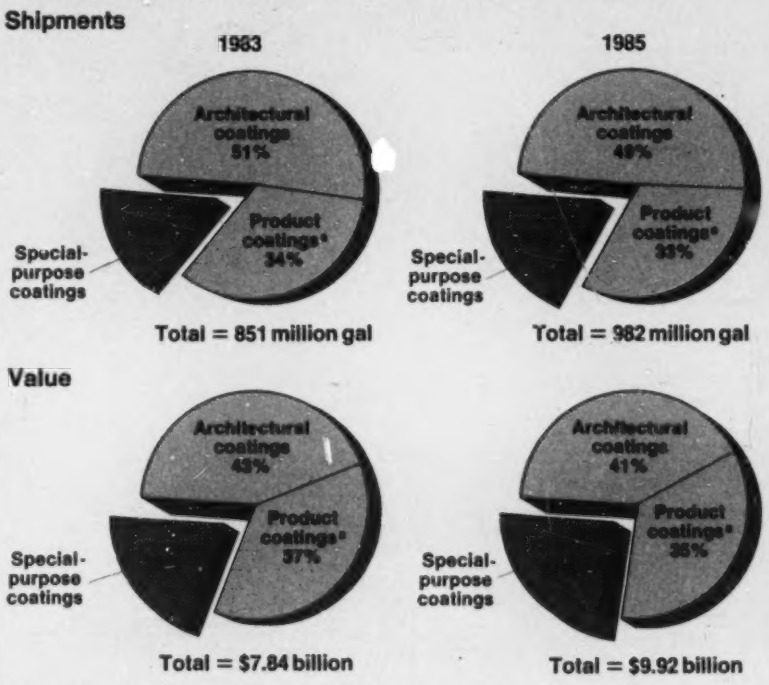
almost 2% through the first half of this year to $10.47 per gal.

The third segment of the industry, special-purpose coatings, which is the most diffuse in terms of end-use categories, has suffered a fate similar to that of product coatings, with shipments and the value of those shipments increasing, but the unit value declining, at least through the first half of this year.

According to the government data, shipments of special-purpose coatings increased more than 36% between 1982 and 1985 to 176 million gal, with almost 23% of that growth coming between 1984 and 1985. The results thus far for 1986, however, indicate that growth this year won't come close to equaling that of 1985. For the first half of 1986, shipments of special-purpose coatings totaled about 89.8 million gal, up less than 6% from the comparable 1985 period.

The increase in the value of shipments of special-purpose coatings

Architectural coatings still lead paint shipments and value, but edge is slipping as special-purpose coatings grow



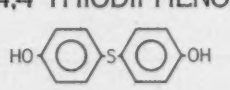
[a] Original equipment manufacturers. **Source:** Bureau of the Census

Crown Zellerbach re-introduces the products you need.

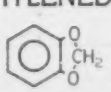
Same chemicals. Same operating plant. Same dependability.
The more things change, the more they stay the same.

Call us for:

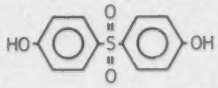
- 4,4' THIODIPHENOL



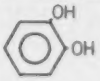
- 1,2 METHYLENEDIOXYBENZENE



- 4,4' SULFONYLDIPHENOL



- EXTRA PURE CATECHOL



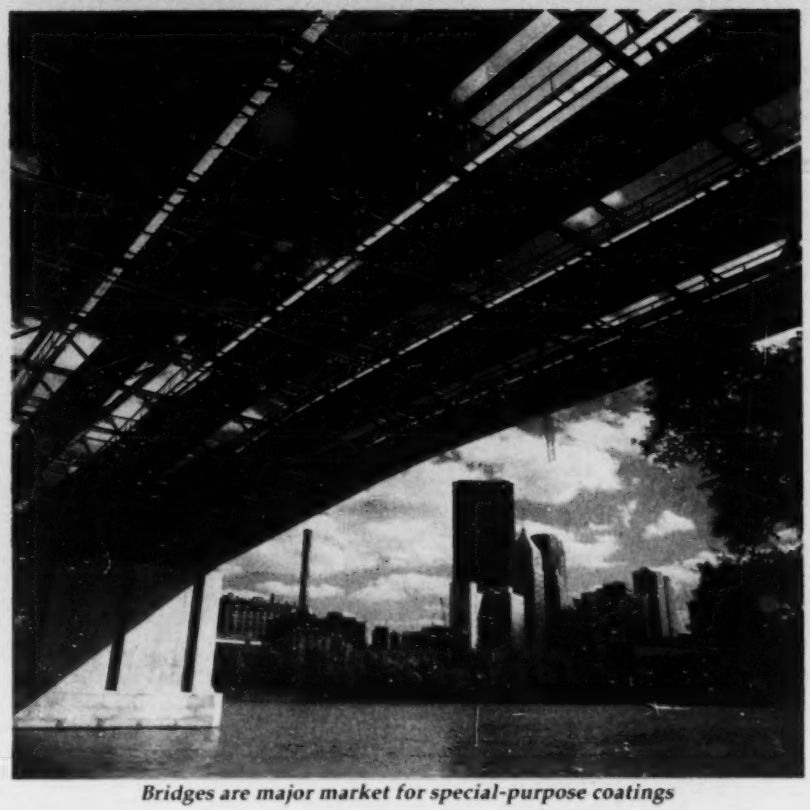
CrownZellerbach
A Subsidiary of James River Corp.
Camas, Washington 98607
(206) 834-8134

CIRCLE 27 ON READER SERVICE CARD

outstripped shipments volume in the past few years, rising 66% between 1982 and 1985 to a total of $2.33 billion, with 30% of that growth from 1984 to 1985. For the first half of this year, the value of shipments totaled $1.2 billion, up less than 7% from the same period a year ago.

The unit value, according to the government figures, however, has not maintained a steady path upward. After increasing every year since 1982, including a 12% increase in 1985 to an average of $13.93 per gal, the average unit price for special-purpose coatings tailed off in the first half of this year, falling almost 4% from the average 1985 unit value to $13.38 per gallon.

The outlook for next year for the two big segments of the paint industry, industry sources point out, is a big question mark. They believe that consumption of architectural coatings probably will slow as growth in demand for single fami-



Bridges are major market for special-purpose coatings

OUR PHARMACEUTICAL INTERMEDIATES

SNPE + $COCl_2$ =

NEW

RCHOCCl
Cl O

ETHYL CHLOROFORMATE
DIETHYL CARBONATE
DIMETHYL CARBONATE
DIPHENYL CARBONATE
PIVALOYL CHLORIDE
TRICHLOROETHYL CHLOROFORMATE

CUSTOM PHOSGENATIONS

CHLORO -ALKYL-CHLOROFORMATES
α-CHLORO-ETHYL-CHLOROFORMATE ACE-Cl
α-CHLORO-ETHYL-ETHYL-CARBONATE

Today, based on its own research, SNPE makes available **NEW PHOSGENE DERIVATIVES** for applications like:

- N-DEALKYLATION OF TERTIARY AMINES
- OH- AND NH_2 GROUP PROTECTION
- SYNTHESIS OF ANTIBIOTIC INTERMEDIATES
- PROTECTION AND ACTIVATION IN PEPTIDE SYNTHESIS

One of the few phosgene specialists, SNPE offers a comprehensive range of services in custom phosgenations and related reactions, from contract research to pilot plant scale or industrial manufacturing upon request.
Please ask for our literature or contact:
SNPE Inc. 103 Carnegie Center, Road One, Princeton NJ 08540 USA
Tlx: 132056 - Tel.: (609) 987.94.24
SNPE Dpt Chimie - 12, quai Henry IV, 75181 PARIS cedex 04 FRANCE.
Tlx: 220380 F - Tel.: 1.48.04.66.66.

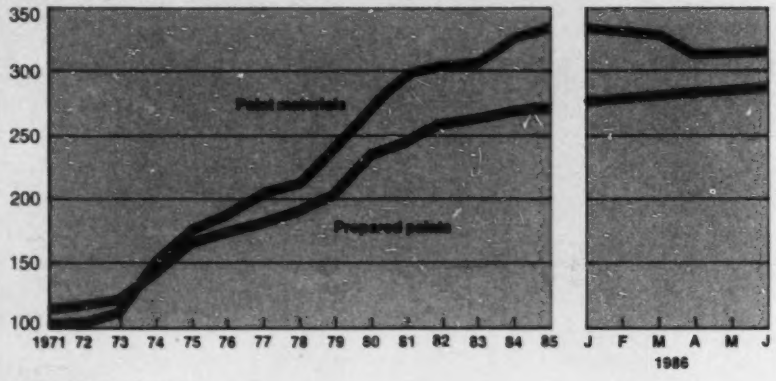
Name: _____
Function: _____
Company: _____
_____
Address: _____
_____
_____

CEN/20.10

SNPE

CIRCLE 46 ON READER SERVICE CARD

Raw material prices moved ahead of paint prices in early 1970s, but gap has narrowed recently



Source: Department of Labor

ly homes finally begins to abate. Construction of new office buildings also will slacken off as economic incentives are phased out in the new tax bill and as the current bulge of new office space in and around many major metropolitan areas remains unfilled. Apartment or multihome building also will decline as a result of the disincentives for construction in the new tax bill.

The outlook for product coatings

Solve your mixing problems with Daxad® Dispersants.

- Keep solids suspended in liquids
- Stabilize emulsions
- Lower viscosity of slurries
- Keep dry powders free flowing
- Improve gas-liquid contact rates
- Prevent scale formation

Write for our new brochure,
"How to Handle Your Mixing Problems."

GRACE

Organic Chemicals Division, W.R. Grace & Co.
55 Hayden Avenue, Lexington, MA 02173 (617) 861-6600

CIRCLE 79 ON READER SERVICE CARD

inspec
The Institution of Electrical Engineers

ONE OF THE WORLD'S BEST-KNOWN ENGINEERING DATABASES!

AT ITS BEST ON STN INTERNATIONAL

- Mounted on STN as a single file
- Citations from 1969 to present
- You'll find:
  - physics
  - electronics and electrical engineering
  - computers and control
  - information technology

Search INSPEC with COMPENDEX, PHYSICS BRIEFS, MEET, NTIS and CAS ONLINE!

STN® INTERNATIONAL
The Scientific & Technical Information Network

2540 Olentangy River Road
Box 02228
Columbus, Ohio 43202 USA

Postfach 2465, D-7500
Karlsruhe 1
Federal Republic of Germany

Gakkai Center Building
2-4-16 Yayoi, Bunkyo-ku
Tokyo 113, Japan

also is difficult to forecast but demand probably will be level or down in 1987. Auto output, which dominates this category, likely will be flat or down next year. Pundits say that many auto sales that would have taken place in 1987 have been advanced to this year as car makers sought to reduce inventories by offering attractive low-rate financing.

The tax bill also will have an effect here, as sales tax and interest on auto loans are no longer deductible. This, in effect, removes the government from subsidizing the purchase of automobiles and makes auto loans more expensive to the consumer. Whether lenders will lower rates to offset this increased expense is a question that as yet cannot be answered.

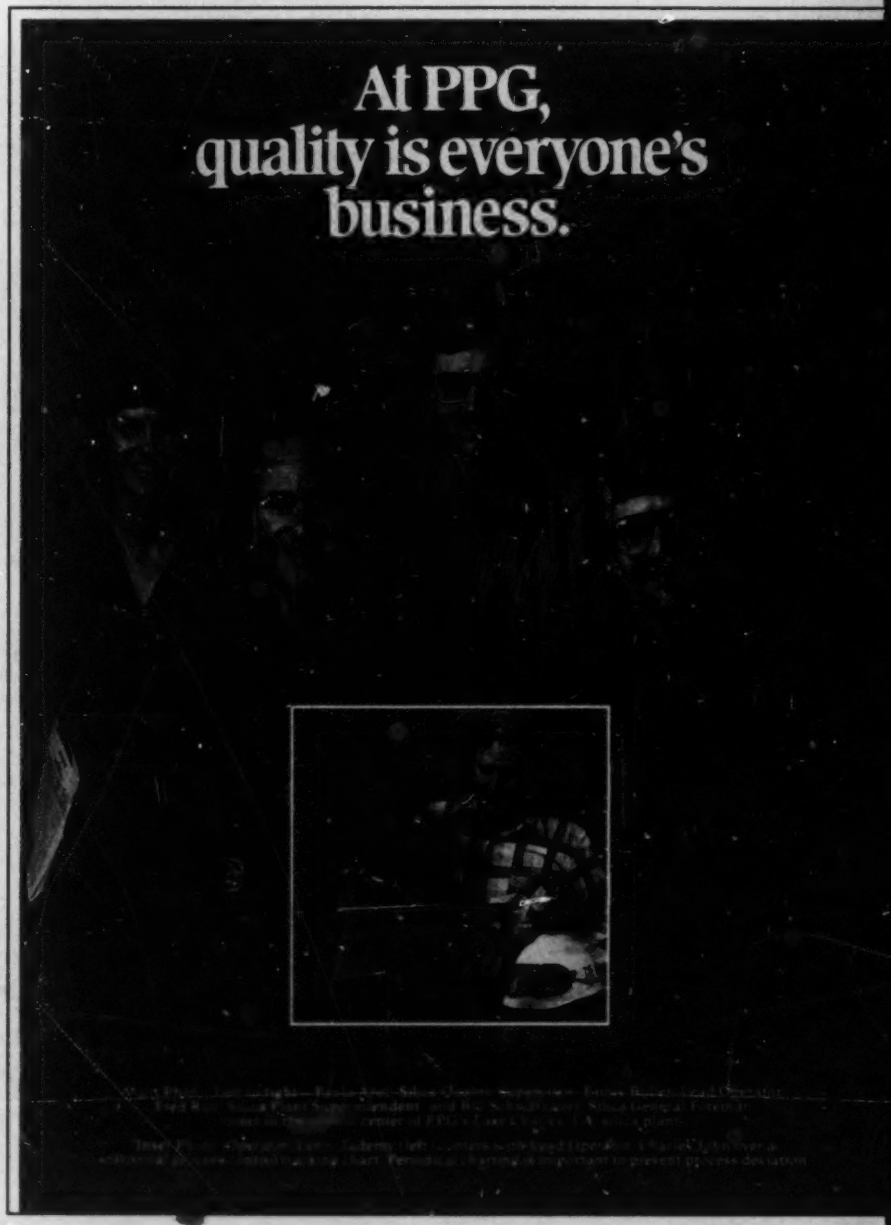
The third segment of the industry, special-purpose coatings, probably will continue its growth next year, at least in volume and probably in value. It is made up of a number of strongly performing end-use markets. Bridge maintenance paints, for instance, are in strong demand as funds continue for road and bridge maintenance. Maintenance coatings for industry also are enjoying good growth as companies continue to refurbish older manufacturing facilities. Industry concern about safety will keep fueling growth of safety-related coatings in this segment of the industry.

Another special-purpose coatings market, high-performance maintenance coatings, likely will continue to show growth at rates above that of the paint industry. According to a new study by WEH Corp., a San Francisco-based consulting firm, the demand for high-performance anticorrosive maintenance coatings in the U.S. probably will rise at an average annual rate of about 5.2% from about $720 million in 1986 to about $1.20 billion by 1996. The WEH study says this growth would be considerably better if not for a downturn in shipping activities and unattractive prospects for crude oil exploration.

Demand for these coatings will get strong upward pressure from markets such as hazardous material and sewage treatment, water storage, and bridges and highways, according to the WEH analysis. More moderate growth will come from defense and space, airlines and aircraft, pulp and paper, and electric and gas utilities.

Like the rest of the paint industry, this portion is going through consolidation and change. Besides ICI's acquisition of Glidden, the study cites Valspar's acquisition of Mobil's coatings division, RPM's acquisition of Carboline from Sun, Ameron's acquisition of Torpedo Marine, Grow's acquisition of Napko, and International Paint's purchase of Matcote.

In the past few years, the slow growth of the economy, especially in terms of big-ticket durable goods, the use of alternative exterior coatings such as vinyl and aluminum



siding for housing, and the more rapid increase of maintenance and other special-purpose coatings, has changed the share of the total paint market contributed by each of the paint segments. In 1983, architectural coatings accounted for 50.5% of total paint shipments. This dropped to 49.5% in 1985. At the same time product coatings fell from 34.3% in 1983 to 32.6% in 1985. But special-purpose coatings rose from 15.2% to 17.9% in those two years.

In terms of value of shipments, the change is even more dramatic. Architectural coatings made up 42.6% of the industry in 1983, but by 1985 their share had fallen to 41.3%. The drop for product coatings was even greater, from 37.4% in 1983 to 35.2% in 1985. However, special-purpose coatings increased their share of the paint industry from 19.9% in 1983 to 23.5% in 1985.

One bright spot for paint makers this year, especially for those producing solvent-based systems, is a drop in the price of raw materials. According to Labor Department figures, the producer price index for paint materials moved ahead of that for prepared paints in the mid-1970s, largely because of the increase in oil prices. In the past couple of years, both price indexes have flattened out considerably, until April of this year when the index for paint materials dropped about 5% from the previous month. This was almost entirely due to a 30% drop in the price index for paint solvents. Producers say this drop, like the rises before it, was related almost entirely to the price of oil. But the upshot is that for the past few months paint makers have been getting a break on raw materials while their own price index has increased ever so slightly, undoubtedly increasing margins for much of the industry.

Against a backdrop of higher-value-added products and greater sophistication, the industry itself, like the entire chemical industry, is changing. There is greater emphasis on specialization, on consolidation, and on technical service.

The paint industry, long made up of myriad small producers (estimates are that there are more than 1000 producers in the U.S. alone), is indeed becoming smaller in terms of the number of producers. Part of this results from consolidation, the most publicized of which have been the big mergers over the past few years, such as ICI's purchase of Glidden and BASF's buying of Inmont.

Another part of the decline in the number of manufacturers results from companies getting out of the business. Many of the small producers, especially of lower-specification products, are being forced out of the paint business by increased overhead costs. Skyrocketing liability insurance rates over the past few years, for instance, have raised the cost of doing business so much that small producers find it nearly impossible to make a profit. Add to

For you, PPG quality means silicas that meet your requirements.

"Around here, quality is everyone's responsibility."
—Ennis Buller, Lead Operator, PPG silica plant, Lake Charles, LA.
That's the key to PPG silica quality. It's more than a set of rules. It's a philosophy that affects everything they do. And how they do it.

One key tool is statistical process control (SPC). PPG operators use SPC to monitor and manage production variables at every stage. They can adjust the process based on early warnings—before product quality is allowed to deviate.

"Quality is conformance to the customers' requirements. We work with the customers to define their specs. With SPC, we're constantly reducing process variability. We've already reduced it as much as 50% on some products. So we stay well within even the toughest requirements."
—Paula Abel,
Silica Quality Supervisor.

Once you and PPG determine your silica requirements, they become PGG's production specifications. And PPG is bound by them. The goal is to meet your requirements every time. No margins for error. SPC is a tool that makes perfection a realistic goal.

"We use customer feedback to complete the communications loop in our quality process. Feedback is important so we can make adjustments here in the plant. If there's something we should be doing better, we want to know about it."
—Bill Schwarzauer,
General Foreman, Silica Products

PPG's total quality approach extends beyond the plant and the product to its applications and research laboratories, to customer service groups and to the silica sales specialists.

"We've found that people want to do the best job they can. Our quality improvement process is developing a climate that reinforces the belief that each and every employee's actions can make a difference."
—Fred Rau, Superintendent, PPG silica plant, Lake Charles, LA.

PPG's quality improvement process represents a commitment to its customers' needs, and to continual product improvement for the insurance of long-term viability as a leading worldwide precipitated silica supplier.

To learn how you can make PPG's quality silicas part of your business, call toll free **1-800-243-6745.** In Pennsylvania call **1-800-243-6746.** PPG Industries, Inc., Chemicals Group, One PPG Place, Pittsburgh, PA 15272.

PPG Silicas.
Where the chemistry's just right for you.

PPG

CIRCLE 69 ON READER SERVICE CARD

Powder coatings may finally realize potential

Powder coatings, those solventless painting systems that have long been the unfulfilled hope of the paint industry, finally may be ready to start living up to their promise. At least this is the conclusion of Frost & Sullivan, the New York City-based market research firm.

The economic recovery and growing demand from a diverse number of industries are providing a setting for a turnaround in powder coatings in the U.S., according to a study by the firm. After failing to meet expectations and showing only an 8% growth rate since the 1970s, powder coatings have increased that rate and the total market is expected to reach 138 million lb by 1988, generating a real dollar volume of nearly $400 million. This is compared to a total 1983 market of 75 million lb and $178 million.

Frost & Sullivan says the powder coatings industry could see an accelerated rate of growth if it comes to grips with such issues as the development and consumer acceptance of coatings such as automotive topcoats, the use of high-speed powder curtain-coating methods, the greater promotion of powder coatings by major paint manufacturers, and domestic production of raw materials currently imported.

In Europe, Frost & Sullivan forecasts powder coatings growth at about 11% per year through 1988 as powder coatings come to be viewed less as alternatives and more as complements to wet paint systems, filling a niche in applications where relatively poor film flow and appearance can be used to some advantage.

In the U.S., the appliance and metal furniture and fixture sectors account for about 35% of the market. Machinery and equipment and construction have the greatest growth rate at about 17% per year. In Europe, tubular steel furniture accounts for about 23% of the market, but the fastest-growing area is the use of powder coatings for exterior-quality architectural finishes, where growth is predicted at about 20% per year.

that the cost of government safety, pollution control, and other programs, and profits are indeed wiped out.

In addition, industry sources say, much of the higher-value-added sector of the paint industry is becoming so sophisticated that the small manufacturer can no longer afford the development costs. Thus, the small producer can't compete with the big producer and its better technology.

As paint systems become more complex and as producers hope to garner greater margins on their products, both on the paint manufacturer and the paint material supplier sides, technical service to customers is taking on an increasingly important role. And this is a role that the small paint maker or paint material supplier cannot hope to fill.

This emphasis on new technologies and technical service is evident throughout the industry. At last year's Paint Industries Show held in St. Louis, John P. McAndrews, group vice president and head of finishes and fabricated products businesses at Du Pont, said that the paint industry must harness the technological expertise "that brought us so far so fast and use it to continue growing and, more important, to resolve key issues facing our industry." The industry issues he cited were the ones common to all of the chemical industry, having to do with increasingly stringent environmental and safety standards.

Earlier this year, Du Pont announced an expansion of its Troy, Mich., corporate automotive development center to "strengthen its support of the worldwide automotive market." At the center, the company will test high-performance coatings for plastics, metal, and oth-

BP

BP Chemicals Americas Inc.

Your Source For:

- Acetic Acid, Glacial
- Formic Acid
- Propionic Acid
- Vinyl Acetate Monomer
- Butyl Acetate
- Ethyl Acetate
- Isophorone (MEK Replacement)
- Polybutenes
- Poluethylene Glycols
- Polyalkylene Glycols
- Diethyl Phthalate
- Cellobond® HEC
- White Gold® HEC
- HEMA, HPMA

For additional information regarding these products as well as others, please contact BP Chemicals Americas at 800-BPCHEMS. In New York State call 914-921-0420.

BP Chemicals Americas Inc.

411 Theodore Fremd Avenue
Rye, NY 10580

You'll profit from the partnership

CIRCLE 81 ON READER SERVICE CARD

er substrates. The facility will simulate actual customer paint line conditions on full-size vehicles using sophisticated robotic equipment. The automotive paint sector is important for Du Pont. Du Pont says that, with its acquisition of Ford Motor's paint assets earlier this year, its paint sales to the auto industry total about $1 billion annually, or about 50% of the company's product sales to the automobile industry.

BASF's Inmont division is another company that is trying to serve Detroit better. Inmont has had a research and development laboratory in Southfield., Mich. Last month, however, it opened an applications research laboratory at the same site. The applications facility has two full-sized paint lines—one for spray and one for electrodeposition—to test technology in advanced coatings chemistry and paint applications before they are introduced in automobile assembly plants. Inmont says the new applications lab is planned to simulate any auto assembly plant painting configuration now used or planned.

Inmont senior vice president, automotive OEM coatings, Kennard A. Kinzler says auto makers are looking for suppliers with technical expertise and the ability to guarantee zero-defect performance, all with the greatest cost efficiency.

The shift to greater emphasis on marketing and technical service, which in the paint industry are becoming more closely related, is evident in employment figures for the industry published by the Labor Department. Between 1977 and 1985, total employment in the paint industry fell almost 4% to 63,600 employees. At the same time the number of production workers dropped 12.5% to 30,700 workers. This means that in that time span, nonproduction workers, which include technical support staff, marketers, and researchers among all other white-collar workers, rose 6.5% to 32,900

Dow chemist grinds powder coating formulation to fine powder

Heat Conversion
Compliance
Water Borne
High Solids
Monomers
Powder

employees. Another way of looking at it is that, in 1977, nonproduction workers accounted for about 47% of total paint employment. In 1985, that percentage had increased to 52%. Even in the one-year span from 1984 to 1985, when chemical employment was increasing 2.6%, the number of production workers increased only 1% while the number of nonproduction workers rose a little more than 4%.

Many paint material suppliers have adopted technical service programs similar to those of the paint makers. The reasons are varied, and depend on the types of materials supplied. For instance, the programs can range from using technical support as a tool to overcome customer resistance to new materials or techniques to providing technical support to help in zero-defect and other quality-related programs.

Dow Chemical, for instance, has instituted, among other technical service programs, a computer service designed to help paint and coatings makers solve problems with formulations containing glycol ether solvent. The company admits that the program, called CASS (computer-assisted solvent selection) service, is part of its efforts to assist paint and coatings formulators in making the transition, which has encountered customer resistance, from ethylene-based to propylene-based glycol ether solvents.

Electrostatic disk painting system applies coating to wooden chairs

Robert Simmons, industrial marketing manager for Dow's chemi-

The Science. The Source. DOW

* Trademark of The Dow Chemical Company

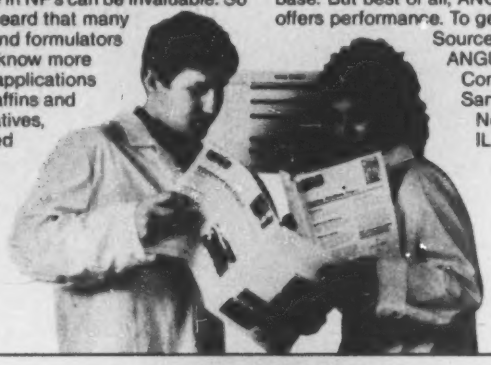
CIRCLE 65 ON READER SERVICE CARD

ANGUS PERFORMS™

We heard you when you asked for more data on the uses of nitroparaffins and their derivatives.

If you seek new products or improved products, ANGUS' leadership and experience in NP's can be invaluable. So when we heard that many chemists and formulators wanted to know more about the applications of nitroparaffins and their derivatives, we prepared a Product Source Guide.

ANGUS also offers sampling, technical assistance and an unmatched data base. But best of all, ANGUS offers performance. To get your New Source Guide, write: ANGUS Chemical Company, 2211 Sanders Road, Northbrook, IL 60062. Or call.



ANGUS®
CHEMICAL COMPANY

AC-9137 Call 800/323-6209. In Illinois, call collect at 312/498-6700. © 1986, ANGUS Chemical Company

CIRCLE 19 ON READER SERVICE CARD

When it rains, it adheres!

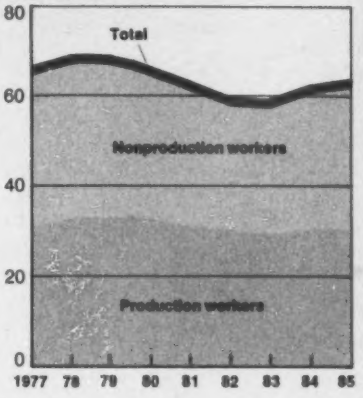
Latex paints keep their adhesion qualities when based on Sipomer® WAM monomer.

The verdict is in on Sipomer WAM wet adhesion monomer. Test after test has shown latex paints based on this monomer demonstrate outstanding adhesion as measured by scrubability and wet peel adhesion testing. Get the facts: give us a call for samples and literature.

ALCOLAC
The Specialists in Specialty Chemicals
3440 Fairfield Road, Baltimore, Md 21226 • 301-355-2600
Alcolac Ltd., 490 Dufferin Street, Valleyfield, Quebec, Canada J6S 2B4 514-373-6164

CIRCLE 16 ON READER SERVICE CARD

Nonproduction workers are making up bigger share of paint employment



Source: Department of Labor

cals and metals department, says this and other technical service operations performed by the company are largely problem-solving functions. A staff of technically trained field specialists work with formulators to solve problems with solvent systems. These support and marketing people carry personal computers, which include a program for data such as the evaporation rates and flash points of blends of solvents with different solubilities. This is backed by a technical service group at Dow's Walnut Creek, Calif., research facility.

Simmons notes that the program has been found useful by both large- and medium-sized paint manufacturers. He adds that, because solvents are basically commodity paint materials, the cost of the service must be made up in increased prices. Also, as is true for many commodities, there is a danger that once a formulation is developed for a manufacturer, the firm may switch to a supplier with lower prices.

This does not happen in the more specialty-oriented, higher-value-added part of the paint materials business.

At Mobay, which sells urethane systems to paint makers, the understanding is that when a customer buys a product, that customer is entering into a verbal contract that the product is for a particular use. As such, the product is expected to

meet customer specifications, and the supplier is obliged to ensure that it does.

Mobay has used this philosophy as a springboard for its technical service effort. Joseph S. Healey, marketing manager, Mobay's coatings division, says that the company's main thrust is forward marketing—helping the customer achieve new markets based on urethane systems. As such, the focus is work on resin development, formulation developments, and applications development. Special emphasis is placed on end-market development in conjunction with the customer.

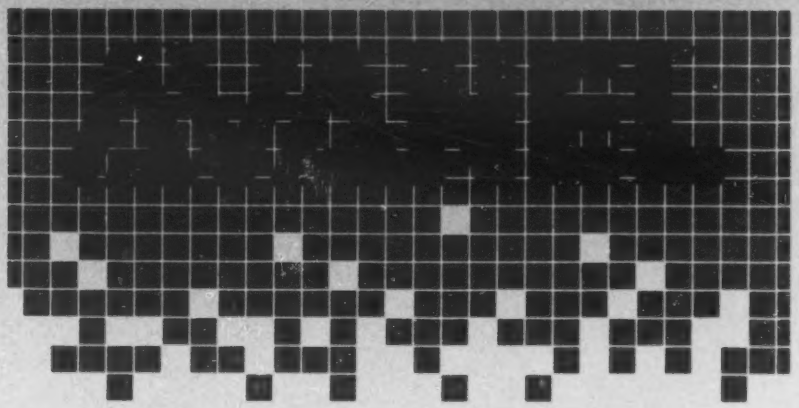
The company employs a technically oriented staff of salesmen backed by a technical marketing organization. The marketing group is generally made up of people who have come out of the laboratory to provide the necessary technical information for the salesmen and the customers.

The major users of technical support, according to Healey, include the automotive industry and producers of architectural coatings of a high-value-added nature, bridge coatings, industrial and chemical plant coatings, and coil coatings that have more stringent requirements because of the rigorous conditions under which they are applied.

John L. Williams, technical marketing manager of industrial coatings, Mobay's coatings division, says that service is the key to overcoming problems and that Mobay has to involve itself in those problems if it is to introduce new technology.

His attitude is pervasive, especially in the higher-value-added sector of the materials business and the paint industry. And, as special-purpose coatings take on increasing importance, this attitude will become even more dominant. Also, the sophistication of systems for product coatings and the sheer size of the business make this segment a must candidate for increased technical service.

The problem, however, in many cases, ultimately will be who pays for technical service. According to some consultants, a time may come when technical service will no longer be done as a favor, but will be an integral part of the contract. □



Try it free and see for yourself.

New AVANEL S Surfactants from PPG could replace the primary, secondary, and post emulsifiers you are using right now in your acrylic systems for coatings, adhesives, sizing compounds, and textiles. That's right, we said replace all three emulsifiers.

Give it a try for free. Send us your application(s) and the type(s) of surfactants you are now using and we'll rush a sample of AVANEL™ and starting recipes to you. Call or write: Rick Jacobs, Commercial Development Specialist, PPG Industries, Inc., One PPG Place, Pittsburgh, PA 15272. (412) 434-2363.

PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

CIRCLE 71 ON READER SERVICE CARD

A Polyol or a Thiol with the Permapol® Backbone:

$$+(CH_2-CH_2-S-CH_2-CH_2-O)_{0.7}-(CH_2-CH_2-S-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_{0.3}+_n$$

can solve your coatings formulation problems by improving:

- *adhesion to difficult surfaces such as concrete*
- *oil and grease resistance*
- *low temperature flexibility and impact resistance*

Send for our new report on the use of Permapol-based polyurethane polymers in primers for linings of jet fuel storage tanks.

Call Herb McNulty at (201) 842-3658 or write Products Research & Chemical Corporation, 9 S. Rohallion Drive, Rumson NJ 07760.

PRC Polymer Group

CIRCLE 62 ON READER SERVICE CARD